



Supporting Campus Researchers

at the Center for High Throughput Computing

Lauren Michael, Research Computing Facilitator
OSG All-Hands Meeting 2014

CHTC Services

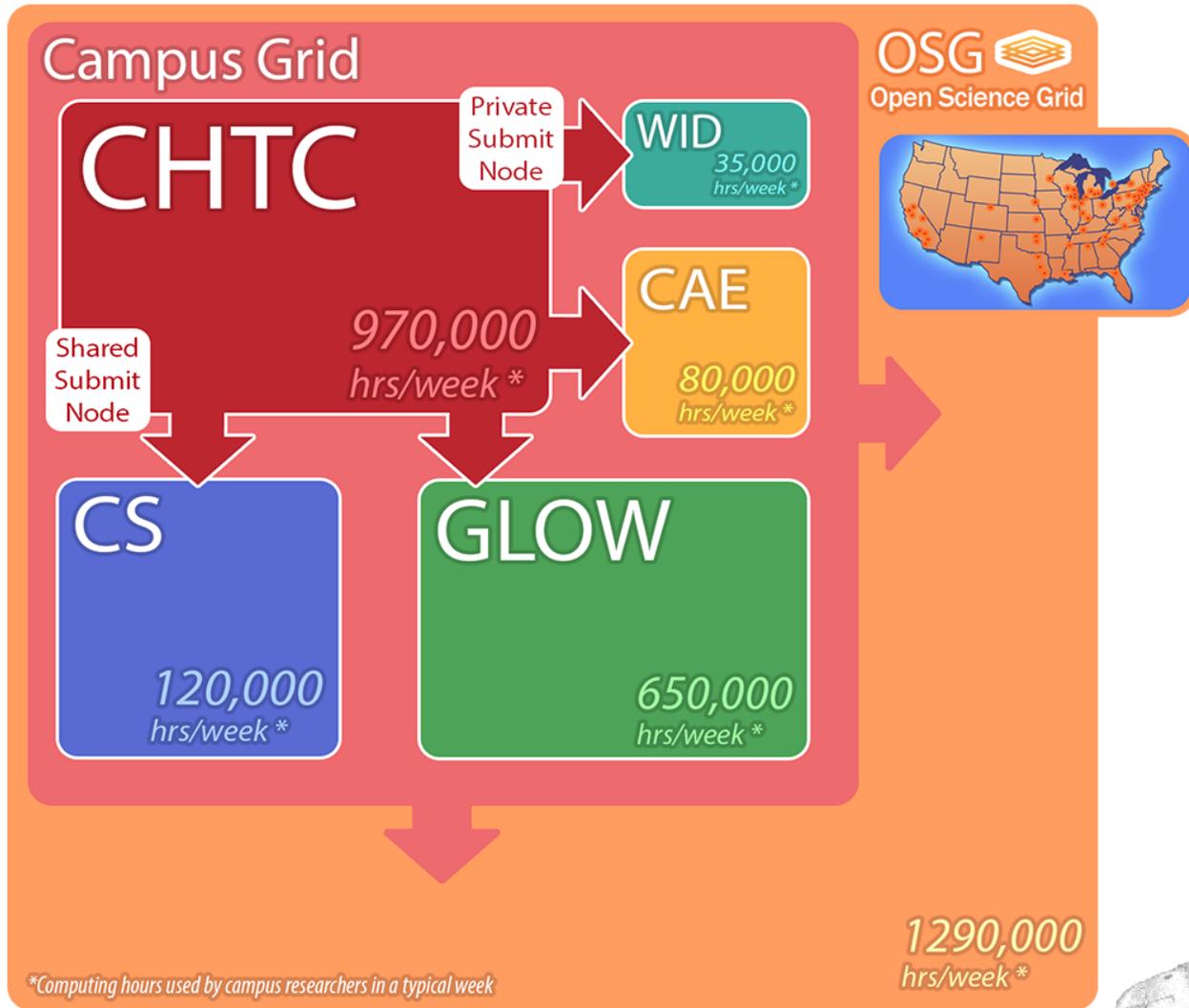
Center for **H**igh **T**hroughput **C**omputing, est. 2006

> Large-scale, campus-shared computing systems

- campus high-throughput (HTC) grid (“GLOW” of OSG) and high-performance (HPC) cluster resources
- **all standard services provided free-of-charge**
- hardware buy-in options for *priority* access
- automatic access to the Open Science Grid (OSG)



Campus DHTC Resources



*Computing hours used by campus researchers in a typical week

CHTC Services (cont.)

› Support for using our systems

- consultation services, training, and proposal assistance
- solutions for numerous software (including Python, Matlab, R)

› Systems design/administration consulting

CHTC Services (cont.)

› Support for using our systems

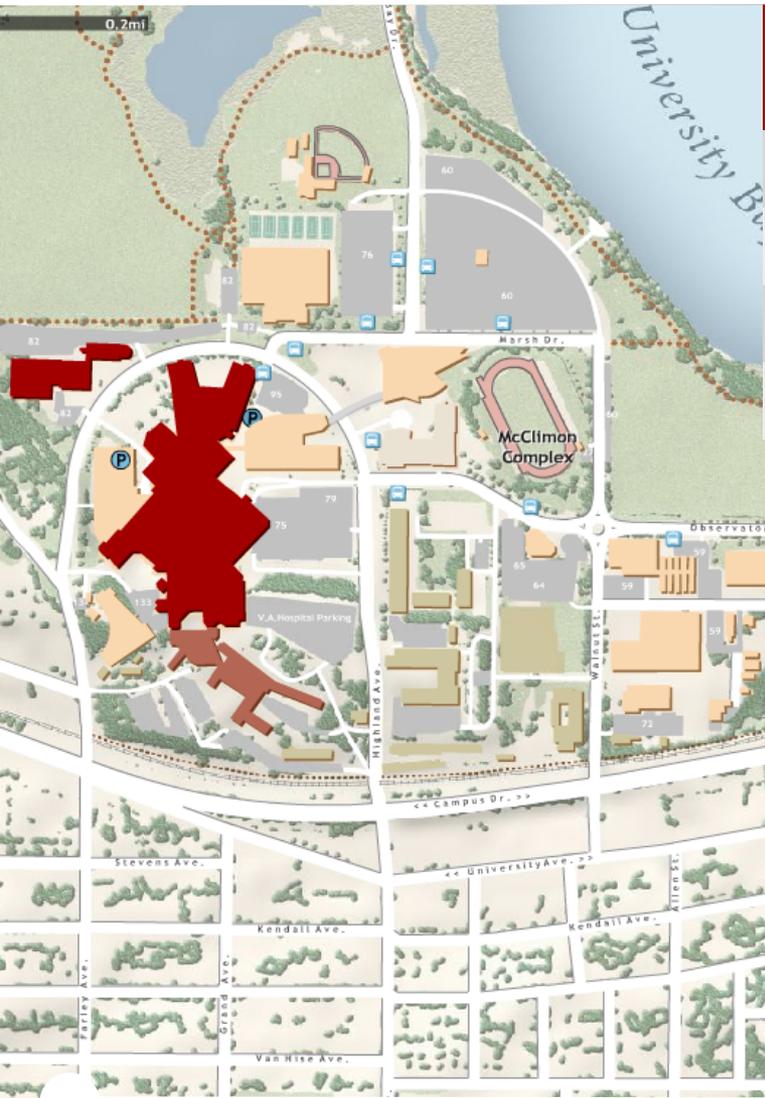
- consultation services, training, and proposal assistance
- solutions for numerous software (including Python, Matlab, R)

› Systems design/administration consulting

HTCondor: CHTC's R&D Arm

› Services provided to the campus community

- R&D for HTC Software
 - HTCondor, DAGMan (workflows), Bosco (“MyHTC”)
- Software Engineering Expertise & Consulting
- Software Testing & Security Consulting



Jul'10- Jun'11	Jul'11- Jun'12	Jul'12- Jun'13	Quick Facts
45	70	97	Million Hours Served
54	106	126	Research Projects
35	52	52	Departments
10	13	15	Off-Campus

Researchers who use the CHTC are located all over campus (red buildings)



What are the **key ingredients** for organizing a campus to support researchers via DHTC?



People.



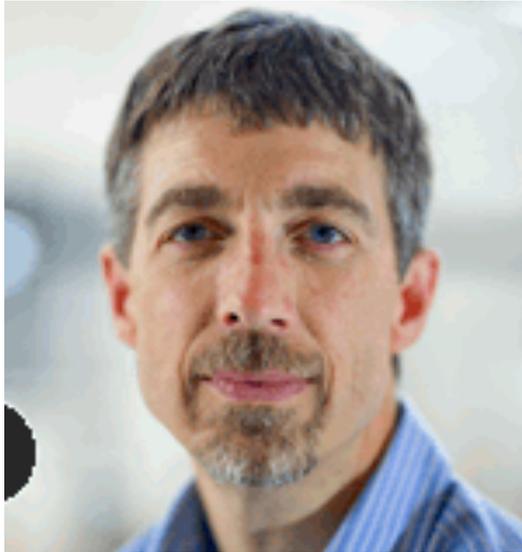
Users are people.



~~Users~~ are people.

Researchers are people.

Know Your Researchers



Name:

(username)

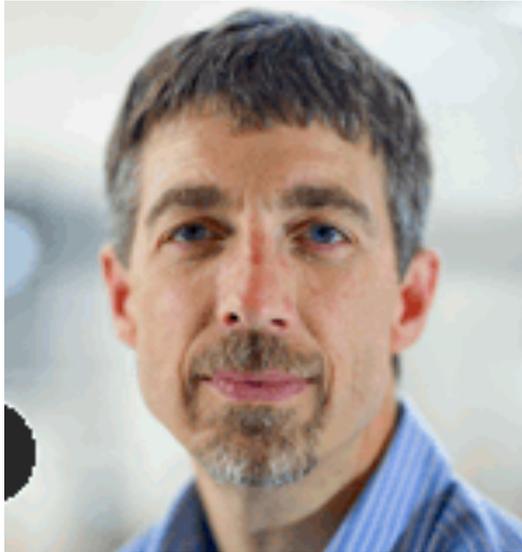
Dept./Org:

Position:

Faculty Sponsor (PI):

Accounting Group:

Know Your Researchers



Notes: research project
role of computing in research
computational experience
general bottlenecks
current compute dimensions
and solution(s)
arising issues

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Know Your Researchers



Notes: research project
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Name: Barry VanVeen

username: bvanveen

Dept./Org: Elec/Comp Engr

Position: Professor

Faculty Sponsor (PI): self

Accounting Group: ECE_VanVeen

Metrics of Behavior



Fm:	2013-04-07	CAE		CHTC		CS		GLOW		OSG		WID		HEP		Total	
To:	2014-04-07	Hours	%Pool	Hours	%Pool	Hours	%Pool	Hours	%Pool	Hours	%Pool	Hours	%Pool	Hours	%Pool	Hours	%Pool
134	Projects	3,144,476	2.6%	50,595,588	42.5%	7,131,040	6.0%	20,001,628	16.8%	13,026,267	10.9%	2,003,355	1.7%	19,679,202	16.5%	119,016,300	100.0%
1	CMS	0	0.0%	1,498,198	3.0%	0	0.0%	13,372,771	66.9%	200,104	1.5%	0	0.0%	13,469,464	68.4%	28,540,537	24.0%
2	IceCube	0	0.0%	6,356,031	12.6%	413,444	5.8%	3,755,774	18.8%	2,574,846	19.8%	0	0.0%	4,802,438	24.4%	17,902,534	15.0%
3	ChE_dePablo	1,168,091	37.1%	5,271,210	10.4%	1,185,319	16.6%	532,786	2.7%	639,382	4.9%	45,822	2.3%	44,317	0.2%	8,886,930	7.5%
4	Statistics_Tsui	57,658	1.8%	2,409,113	4.8%	834,828	11.7%	320,335	1.6%	1,791,965	13.8%	156,748	7.8%	136,206	0.7%	5,706,855	4.8%
5	Economics_Roys	22,478	0.7%	3,602,925	7.1%	360,226	5.1%	54,021	0.3%	353,489	2.7%	40,055	2.0%	128,348	0.7%	4,561,545	3.8%
6	Biochem_Mitchell	9,535	0.3%	2,026,420	4.0%	440,654	6.2%	54,512	0.3%	473,101	3.6%	67,339	3.4%	336,874	1.7%	3,408,438	2.9%
7	Physics_Friesen	0	0.0%	1,314,964	2.6%	0	0.0%	10,777	0.1%	1,335,418	10.3%	0	0.0%	59,813	0.3%	2,720,973	2.3%
8	Physics_Knezevic	1,738	0.1%	2,621,382	5.2%	15,397	0.2%	2,339	0.0%	4,366	0.0%	8,017	0.4%	21,759	0.1%	2,675,000	2.2%
9	BMRB	0	0.0%	245,865	0.5%	0	0.0%	0	0.0%	2,346,673	18.0%	0	0.0%	0	0.0%	2,592,539	2.2%
10	WID_POOL	0	0.0%	1,000,116	2.0%	0	0.0%	0	0.0%	159,362	1.2%	1,334,020	66.6%	0	0.0%	2,493,499	2.1%
11	LMCG	1,093,574	34.8%	52,690	0.1%	165,914	2.3%	514,491	2.6%	0	0.0%	0	0.0%	360,692	1.8%	2,187,364	1.8%
12	OSG	0	0.0%	2,094,801	4.1%	0	0.0%	85,367	0.4%	0	0.0%	0	0.0%	2,525	0.0%	2,182,694	1.8%
13	Psychiatry_Kalin	55,587	1.8%	658,679	1.3%	406,640	5.7%	257,329	1.3%	711,824	5.5%	3,184	0.2%	0	0.0%	2,093,245	1.8%
14	backfill	0	0.0%	1,818,329	3.6%	56,952	0.8%	121,255	0.6%	0	0.0%	0	0.0%	0	0.0%	1,996,538	1.7%
15	ECE_VanVeen	64,700	2.1%	1,093,430	2.2%	257,662	3.6%	8,693	0.0%	301,642	2.3%	81,567	4.1%	90,710	0.5%	1,898,406	1.6%
16	AnimalSciences_Berres	0	0.0%	1,716,724	3.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,716,724	1.4%
17	Purdue	0	0.0%	933,471	1.8%	686,708	9.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,620,179	1.4%
18	ERC	83,030	2.6%	1,515,629	3.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,610,778	1.4%
19	Chemistry_Schmidt	167	0.0%	1,011,173	2.0%	2,074	0.0%	746	0.0%	5,629	0.0%	1	0.0%	0	0.0%	1,519,660	1.3%
20	Physics_Perkins	0	0.0%	542,086	1.1%	6,012	0.1%	606,598	3.0%	282,271	2.2%	0	0.0%	20,707	0.1%	1,457,676	1.2%
21	CHTC	1,478	0.0%	228,204	0.5%	48,235	0.7%	218,555	1.1%	804,376	6.2%	10,455	0.5%	1,565	0.0%	1,312,872	1.1%
22	Economics_Gregory	12,662	0.4%	686,245	1.4%	210,860	3.0%	4,350	0.0%	245,511	1.9%	54,955	2.7%	83,403	0.4%	1,297,989	1.1%
23	CS	0	0.0%	913	0.0%	1,290,479	18.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,291,392	1.1%
24	Biostat_Singh	4,886	0.2%	893,129	1.8%	133,105	1.9%	5,323	0.0%	43,778	0.3%	13,731	0.7%	71,611	0.4%	1,165,566	1.0%
25	CAE	534,612	17.0%	443,055	0.9%	2,240	0.0%	0	0.0%	0	0.0%	0	0.0%	132	0.0%	980,041	0.8%
26	Statistics_Shao	78	0.0%	934,761	1.8%	7,874	0.1%	128	0.0%	3,341	0.0%	1,587	0.1%	1	0.0%	947,772	0.8%
27	Genetics_Pool	180	0.0%	506,492	1.0%	31,244	0.4%	5,080	0.0%	117,340	0.9%	1,425	0.1%	23	0.0%	661,786	0.6%
28	Zoology_Lee	17	0.0%	631,874	1.2%	315	0.0%	0	0.0%	245	0.0%	0	0.0%	48	0.0%	632,500	0.5%
29	EngrPhysics_Wilson	0	0.0%	273,403	0.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	631,694	0.5%

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18	ERC	0	0.0%	1,610,778	1.4%
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25	CAE	0	0.0%	980,041	0.8%
26	Statistics_Shao	3,341	0.0%	947,772	0.8%





**Make it easy for researchers
to find **the right people.****



**Library/Data
Curation
Resources**

**Compute
Centers
(CHTC)**

**Central
Campus IT**

data storage *data centers*

desktops *networking*

**Research
Funding
Services**

**Classes and
other
Training**



Make it easy for researchers to find **the right people.**

Reduce the number of entry points to **1**



Make it easy for researchers to find **the right people.**

Reduce the number of entry points to '1'

“Facilitators”

- consultants/matchmakers for research computing
- identify with researchers
- identify with the *user* perspective





**Data
Management
Resources**

**Compute
Centers
(CHTC)**

**Central
Campus IT**

data storage *data centers*

desktops *networking*

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Funding
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other
Training**

Communication



Help researchers with COMPUTING

not “DHTC”, or “HTC”, or “HPC”

Communication



Help researchers with COMPUTING

not “DHTC”, or “HTC”, or “HPC”

Form a partnership (people) network

with other IT service providers

Communicate *with* each other.

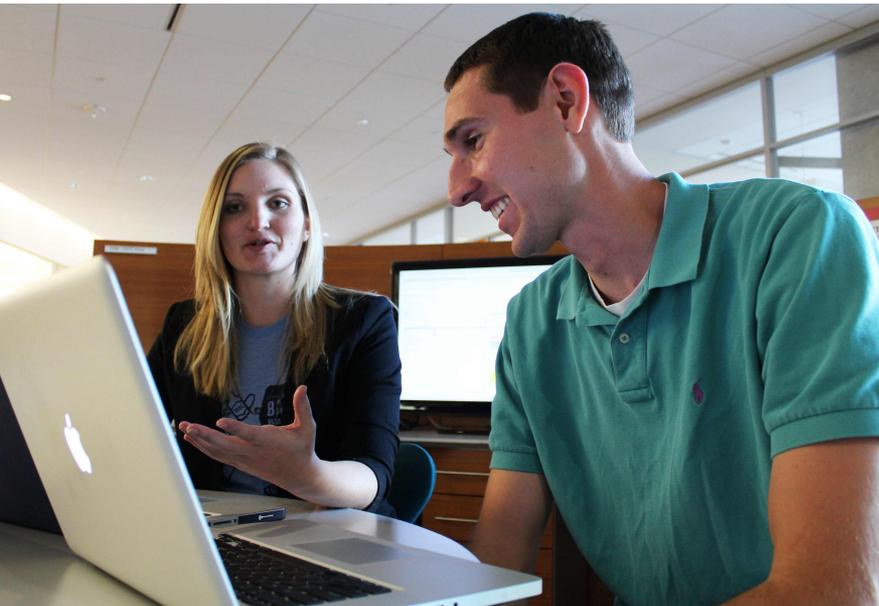
Communicate *about* each other.

Communicate *together* with researchers.

“Engagements”

-consultations between Facilitators and researchers

where *Communication and People*
come together



“Engagements”

-consultations between Facilitators and researchers

where *Communication and People*
come together



- before** accounts are created
- involve faculty**
- occasional check-ups
- as part of other/partner events

By Focusing on **People**



By Focusing on **People**



Researchers **become partners**

By Focusing on **People**



Researchers **become partners**

Support *research* **PRO**actively vs **RE**actively

-anticipate evolving researcher demands and new appropriate solutions

By Focusing on **People**



Researchers **become partners**

Support *research* **PRO**actively vs **RE**actively

-anticipate evolving researcher demands and new appropriate solutions

**Truly accelerate research throughput;
expand scale and scope**



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